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ABSTRACT TITLE:

Multi-season Observation of North American Boreal Forest with JERS SAR

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ABSTRACT TEXT:

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The Global Boreal Forest Mapping (GBFM) project is an international collaborative effort to assemble mosaicked data sets of L-band JERS-1 Synthetic Aperture Radar (SAR) imagery of world-wide boreal forests. Final products of the North American GBFM effort will include two continental scale SAR mosaics representative of winter and summer conditions, respectively. A component of this effort involves the assembly of multi-temporal JERS SAR imagery of Alaskan and Canadian boreal forest regions. In this paper, we examine the utility of the JERS multi-temporal data set for monitoring seasonal freeze/thaw cycles in boreal landscapes. We compare the JERS SAR response with similar multi-temporal data derived from ERS-1 SAR C-band and NASA Scatterometer (NSCAT) Ku-band sensors. As landscape freeze/thaw transitions are major drivers of boreal ecosystem and hydrological processes, we examine contemporaneous in situ observations of vegetation and soil temperature, vegetation physiological activity, and snowpack and river flow dynamics. We seek to incorporate the radar-inferred freeze/thaw dynamics within the framework of ecological models for improved estimates of boreal ecosystem processes. ---- This work was carried out at the Jet Propulsion Laboratory, California Institute of Technology, under contract with the National Aeronautics and Space Administration.

TOPIC PREFERENCE: Special Session on Global Forest Mapping Project